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10/827,152

04/19/2004

Takuya Tsukagoshi

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SEED INTELLECTUAL PROPERTY LAW GROUP PLLC

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SUITE 6300

SEATTLE, WA 98104-7092

EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                 |                    |  |
|------------------------------|-----------------|--------------------|--|
| <b>Office Action Summary</b> | Application No. | Applicant(s)       |  |
|                              | 10/827,152      | TSUKAGOSHI, TAKUYA |  |
|                              | Examiner        | Art Unit           |  |
|                              | Audrey Y. Chang | 2872               |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/19/2004</u> .   | 6) <input type="checkbox"/> Other: ____.                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which was **not** described in the specification in such a way as to **enable** one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification and the claims **fail** to teach “regions in which optical modulated patterns are formed by projecting the signal beam and the reference beam onto holographic recording medium” as recited in claims 1 and 3. The optical modulated patterns, which are in the servo layer, are simply **not** formed by the signal beam and reference beam. The signal beam and reference beam are used to record holographic information.

### *Claim Objections*

3. **Claims 1-5 are objected to because of the following informalities:**

*The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.*

(1). The phrase “having regions in which optical modulated patterns are formed by projecting the signal beam and the reference beam” recited in claims 1 and 3 is vague, confusing and indefinite since it is not clear WHAT is having these regions. That is to say where are these regions located. Furthermore,

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what is considered to be the “optical *modulated pattern*”? Is this referred to pattern to “modulate” incident beam or a pattern **formed by** “optical modulation”? Clarifications are required. *For the purpose of examination, these regions are being interpreted as the “servo pattern” which is formed to optically modulate the incident beam.* These servo patterns are also not formed by projecting signal and reference beams since claims specifically state that the signal beam is arranged **not to** incident on the regions the patterns are formed. **Clarifications are a must.**

(2). Claims 1-5 are also incomplete since the structural and logical relationships between the “the regions in which optical modulated patterns”, the “optical modulated patterns” and the *recording of* “phase information of light” are lacking to clearly define the metes and bounds of the claims.

(3). The phrase “the optical modulated pattern is formed by servo projections formed on the servo layer” recited in claim 2 is confusing and indefinite since it is not clear what are these “projections”. The term “projection” in the art often is referred to “projection of light”. Does this means the optical modulated pattern is formed by the projection of servo beam? If this term is referred to *physical protrusions* and *recess*, then perhaps the term “protrusions” should be used.

**Appropriate correction is required.**

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent application publication of Horimai (US 2003/0063342 A1).**

**Horimai** teaches an apparatus and method for *holographically recording optical information* wherein the apparatus is comprised of a *holographic recording medium* (1, Figure 1) having a *holographic recording layer* (3) and a *servo layer* (4), wherein the servo layer has regions in which *address servo area* (6) having a plurality of embossed servo pits, that serves as the optical modulated pattern for modulating a servo beam (please see paragraph [0136]), are formed. Horimai teaches that the *holographic information* is recorded by projecting a *signal beam*, (such as 51L Figure 7) via a *spatial light modulator* (18) for imparting signal information, and a *reference beam* (such as 51R), and the holographic recording is a recording of the *phase information* of the interfering signal and reference beams. The retrieve of the recorded holographic information is by projecting only the reference beam to the holographic recording medium to reproduce the holographic information. Horimai further teaches that an *objective lens* (12, Figure 1) is used to focus the signal beam on the holographic recording layer (3). The signal beam and the reference beam are being projected to the holographic recording medium via *projection optics* including *prism blocks* (15 and 19) and the *objective lens*. The optical paths of the signal beam and reference are also implicated set up by the projection optics. Horimai et al also teaches that a *servo beam* can also be projected via *projection optics* such as the prism blocks (15 and 19) and via the objective lens to the specific locations of the address servo areas (6) to retrieve the servo signal. It is implicitly true that since the address servo areas (6) are only located at certain positions of the servo layer the beam path for the servo beam and the beam path for the signal or reference beam are either implicitly different or would have been obvious to one skilled in the art to specifically make it different by moving the objective lens via the *actuator* (13, Figure 1) so that the retrieving of the servo information and the retrieving of the recorded holographic information will not be interfering each other to reduce the possible reading noise, (please see paragraphs [0123] to [0136]).

With regard to claim 2, Horimai et al teaches that the address servo area (6) comprises embossed pits which are physical servo projections or protrusions, (please see Figure 1 and paragraph [0136]).

**6. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Curtis (PN. 6,909,529) in view of the patent application publication of Horimai (US 2003/0063342 A1).**

Curtis teaches an *apparatus and method for holographic data storage* that is comprised of a *holographic recording medium* (124, Figures 11 and 12) that includes a *photosensitive layer* (124a') serves as the *recording layer* and a *servo layer* (210). The servo layer comprises *servo marks* (210) that serve as the *optical modulated pattern to optically modulate the servo beam*. Curtis teaches that the holographic data storage is achieved by projecting a *signal beam* (142, Figure 4 and 11) via a *spatial light modulator* (128) for data modulating the signal beam and a *reference beam* (140) to the holographic recording medium (124), wherein the *phase* information of the interfering signal and reference beams are recorded in the recording layer. Curtis teaches projection optics including beam splitter (112), block (120) an *objective lens* (122) is used to project the signal beam to the recording medium, (please see Figure 4). Curtis also teaches that a *servo beam* (240) is projected by the projection optics including the beam splitter (245), the dichroic mirror (242) and the objective lens (122, Figure 11) to the *servo layer* to retrieve the servo signal from the servo marks. The *objective lens* (122) is provided to focus the signal beam and also the servo beam at the recording layer and the servo layer respectively. As explicitly shown in Figure 12, the optical path for the servo beam (240) and the optical path for the signal beam (142) are different, for one thing they are focused at different locations and depths. Furthermore, as shown in Figure 11, Curtis teaches that the servo marks are *only* formed at *periphery* of the holographic recording medium this suggests that the projection of the servo beam and the projection of the signal beam should be at different locations (servo beams only at the servo marks). It would then have been obvious, if it is

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not already the case of Curtis, to one skilled in the art to modify the beam projections direction of the signal beam and the servo beam being different from each other so that the retrieving/recording the holographic data information and the retrieving of the servo signal will not interfere each other so that unwanted reading noise would not be created. With regard to claim 4, since the servo marks are on the periphery of the recording medium, it would have been obvious to one skilled in the art to make the servo beam projected to the recording medium at different angle than the signal beam so that it can best retrieve the servo signal, (please see columns 4-7, and 14-15).

This reference has met all the limitations of the claims. Curtis teaches that the servo layer is at opposite side of the recording layer (124a') but it does not teach explicitly that the servo layer is at opposite side of the recording layer *viewed in the direction* of the signal beam. However the arrangement of the order of the layers does not make the function of the servo layer and the recording layer any different it only requires refocusing the beams accordingly which is within the general skill of the a worker in the art. **Horimai et al** in the same field of endeavor teaches explicitly that it is known in the art to make the servo layer (4) with address servo areas (6) at the *opposite side* of the recording layer (3) viewed in the direction of the signal beam. Such modification would have been obvious to one skilled in the art for it is really a matters of design choices to one skilled in the art for making the recording medium satisfies the desire of the individual and satisfies certain requirements of the applications.

With regard to claim 2, Curtis teaches that servo marks are of reflective marks. **Horimai et al** teaches that the address servo area (6) comprises *embossed pits* which are physical servo projections or protrusions, (please see Figure 1 and paragraph [0136]).

**7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Curtis (PN. 6,909,529) in view of the patent application publication of Horimai (US 2003/0063342 A1) as applied to claim 3 above, and further in view of the patent issued to Matsui (PN. 5,784,353).**

The apparatus and method for holographic data storage taught by **Curtis** in combination with the teachings of **Horimai** as described for claim 3 above have met all the limitations of the claim. **Curtis** teaches that a projection means including a dichroic mirror and beam splitter is used to project the servo beam to the servo marks, (please see Figure 11). However it does not teach explicitly to include a diffraction grating as a deflecting means for deflecting the servo beam to the desired location. However diffraction grating is known in the art has as light beam deflection means for the essential diffraction property of the incident light. **Matsui** in the same field of endeavor also teaches an apparatus for initializing optical disk including detecting servo signal from the optical disk wherein a servo beam is projected by the projection optics including *diffraction gratings* (103 and 104) as deflecting means and the dichroic mirror (106) for projecting the servo beam to the recording medium. It would have been obvious to one skilled in the art to apply the teachings of **Matsui** to include diffraction gratings as beam deflection means in the servo beam projection optics of **Curtis** for the benefit of making the servo beam reaches desired locations and for efficiently retrieving the servo signal.

### ***Double Patenting***

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. **Claims 1-5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting** as being unpatentable over claims 1, 3, 4 and 6-7 of copending **Application No. 10/800607**. Although the conflicting claims are not identical, they are not patentably distinct from each

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other because they both disclose a holographic recording and reproducing method and apparatus that is comprised of a holographic recording medium having a recording layer and a servo layer having optical modulated pattern formed wherein the servo layer is placed at opposite side of the recording layer viewed in the direction of the signal beam.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

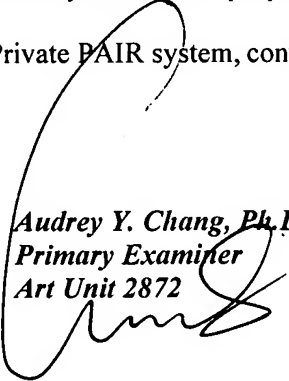
***Contact Information***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Audrey Y. Chang, Ph.D.  
Primary Examiner  
Art Unit 2872*



A. Chang, Ph.D.